

LAND ECONOMY TRIPOS Part IA
LAND ECONOMY TRIPOS Part IB

Monday 26 May 2008, 09.00 - 12.00

Paper 3

ACCOUNTING AND DATA EVALUATION

Answer **five** questions

*Section A has six questions, of which you are to answer **four**.
You must answer each subpart of each question you choose.
Section B has two questions, of which you are to answer **one**.*

*Section A will be **weighted two-thirds** of the final mark for
this examination and Section B will be **weighted one-third** of
the final mark for this examination.*

**An answer to each section must be tied up separately with
its own cover sheet.**

*A copy of the statistical tables is on your desk together with a
list of statistical formulae.*

*Unless otherwise stated each part of each question carries
equal weight.*

You may not start to read the questions
printed on the subsequent pages of this
question paper until instructed that you
may do so by the Invigilator

SECTION A

Question 1 [20 Marks]

- a. A comparison of stock market returns before and after antitrust trials is to be carried out. A sample of 21 stock returns from the pre-trial period has a mean of 0.105 and standard deviation of 0.09. A sample of 28 stock returns from the post-trial period has a sample mean of 0.1331 and standard deviation of 0.122. Assuming that the variances of the two populations are equal, test at the 5% significance level whether the mean stock return has been affected by the antitrust trials. (8 Marks)
- b. A firm is interested in determining which of two methods of teaching new computer skills to their employees would be most effective. They have selected 20 employees (ten matched pairs) to take the training. One member from each of the pairs will attend each of the two training courses. The final test scores are provided below. Based on these data, can you conclude that there is a difference in learning attainment between the two methods of computer skills training?

<i>Pair Number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
<i>Method One</i>	56	59	61	48	39	56	75	45	81	60
<i>Method Two</i>	63	57	67	52	61	71	70	46	93	75

(7 Marks)

- c. Three fair dice are placed in a bag. They are typical in size but vary in colour, with one being orange, one being purple and one being green. The experimenter selects one die at random, rolls it, and records its colour and the number rolled.
- What does the term 'at random' mean in this context?
 - What are the probabilities of the following events:
 - Purple with an even number?
 - Neither even green nor odd orange?

Show your working.

(5 Marks)

[TURN OVER]

Question 2 [20 Marks]

- a. A preparatory school wishes to improve their reputation and would like to publicise that their students' test scores have improved during the past two years. A random sample of 12 students was selected for the study. Their test performance from two years earlier and their current test scores were each recorded and are provided below:

<i>Student</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>
<i>Earlier Score</i>	42	56	64	57	45	43	62	51	39	64	43	62
<i>Current Score</i>	56	73	87	68	59	62	79	62	60	87	62	79

The pass mark for the test is 60%. Has the proportion of students passing the test improved across the two years?

(9 Marks)

- b. Suppose that in Wales one person in six is green-eyed. If a class in Wales contains 40 students, what is the probability that 10 or more of the students will be green-eyed?

(5 Marks)

- c. We record the monthly incomes (£) of a random sample of ten individuals selling the 'Big Issue'. They are as follows:

200 550 290 170 180 350 190 210 160 250

We know from previous studies that the distribution of incomes for people selling the 'Big Issue' is not normal. Test the hypothesis that the median monthly income for this group is £250.

(6 Marks)

[TURN OVER]

Question 3 [20 Marks]

- a. An advocacy group for young adults believe that young drivers continue to pay high insurance premiums, even after they have been driving for three years. They have randomly collected the following information from a sample of eight young adults with regard to how long they have been driving and how much they are currently paying for car insurance. (The advocacy group has done their best to control for other factors such as the size and model of car, area of residence, etc.)

Months Driving	Insurance Premium (£)
36	105
30	120
12	160
18	155
36	70
24	150
6	185
18	130

Perform a regression analysis to assess the relationship between number of months driving and cost of insurance.

(20 Marks)

[TURN OVER]

Question 4 [20 Marks]

- a. The actual weights of peanut butter in 12 jars marked 452g were recorded. Six of the jars were randomly selected from a large batch of Brand P peanut butter and six were randomly selected from a large batch of Brand B peanut butter. The weights in grams were:

Brand P	442	445	440	448	443	450
Brand B	452	450	456	456	460	449

- (i) Calculate a 95% Confidence Interval for the mean weight of each of the brands of peanut butter.
 (ii) Is it reasonable to conclude that the mean weight of a jar of peanut butter from each of the brands is 452g?

(7 Marks)

- b. A random sample of seven students was asked to rate, on a 10-point scale, two courses they had taken. A rating of 1 means “a nightmare – definitely would not recommend the course” and a rating of 10 means “a dream – definitely would recommend the course”. The results are provided below:

Course Ratings		Ranking of Course Ratings	
Statistics Course	Maths Course	Ranks of Stat Ratings	Ranks of Maths Ratings
7	6	3	3
6	5	4	4
3	7	6	2
8	3	2	6
2	4	7	5
10	9	1	1
4	2	5	7

At the 0.05 significance level, is there evidence of a significant relationship between ratings for the statistics course and the maths course?

(7 Marks)

- c. List and discuss the assumptions which must be met in order to use a linear regression to assess the relationship between two variables.

(6 Marks)

[TURN OVER]

Question 5 [20 Marks]

- a. Scores on an aptitude test used for determining admission to graduate study in business are known to be normally distributed, with a population mean of 500 and a population standard deviation of 100. If a random sample of 12 applicants from a given university has a sample mean of 537, is there evidence that this mean score is different from the mean expected of all applicants? (Use a 0.01 level of significance.)
- (5 Marks)

- b. Property developers are interested in determining if two-bedroom flats or two-bedroom terrace houses would be more popular for given age groups. Specifically, they want to assess young adult singles and older adult singles as their target markets. Their question is whether or not there is a difference between these two groups with regard to these two types of housing. They collect the following data:

<i>Housing Preference</i>	<i>Age of Respondent</i>		<i>Totals</i>
	20-35	36-50	
Two Bed Flat	90	100	190
Two Bed Terrace House	50	30	80

Is there a difference in housing preference for single adults in these two age groups?

(15 Marks)

[TURN OVER]

Question 6 [20 Marks]

- a. A national real estate lettings firm is assessing staffing for their offices around the country. Past experience tells them that Fridays and Saturdays are always busy and require peak numbers of staff. They now want to assess if there is any difference in customer activity on the remaining four week days. They will measure customer activity by the number of telephone enquiries received in each of six randomly selected offices. If they determine that one or more days are busier than the others then they will increase staffing in their offices for those days. They have randomly selected six offices around the nation and tallied the number of phone calls received on each of the four week days in these offices.

Phone calls in each randomly selected office are shown below:

Monday	Tuesday	Wednesday	Thursday
18	15	12	17
11	21	18	14
14	16	10	22
17	13	15	16
13	12	17	24
16	19	20	20

- i) Are the days of the week all statistically equal with regard to customer enquiries?
- ii) What assumptions about the data are required to use the test you have chosen?

(15 Marks)

- b. Explain what is meant by the term “the power of the test” with regard to statistical hypothesis testing. How does this differ from the “effect size” of a test?

(5 Marks)

[TURN OVER]

SECTION B**Question 7**

Both parts of this question must be answered.

Trial Balance as at 30 June 2007

	£000	£000
Ordinary share capital		625
Preference share capital		265
Share premium account		23
Revaluation reserve		15
General reserve as at 1 July 2006		10
Profit and loss account as at 1 July 2006		19
Bank loan		75
Land and buildings at cost	925	
Fixtures and fittings at cost	125	
Patents	45	
Motor vehicles at cost	350	
Opening stock as at 1 July 2006	18	
Debtors	112	
Creditors		98
Bank	154	
Electricity	45	
Wages and salaries	210	
Telephone	7	
Sales		1600
Insurance	35	
Purchases	800	
Rates	12	
Other administration expenses	68	
Land and buildings accumulated depreciation as at 1 July 2006		23
Fixtures and fittings accumulated depreciation as at 1 July 2006		75
Motor vehicles accumulated depreciation as at 1 July 2006		78
	2,906	2,906

[TURN OVER]

QUESTION 7 CONTINUEDNotes (all figures in £000s)

- i) Closing stock is valued at £14;
 - ii) The following are not recorded in the trial balance;
 - a) Dividends payable on ordinary shares £36 and on preference shares £12;
 - b) Taxation payable £62;
 - iii) There is a prepayment of £7 on insurance and £4 on rates;
 - iv) There is an accrual of £18 on salaries and wages;
 - v) The auditor's fees are £24;
 - vi) Depreciation is to be charged as follows:
 - a) Land and Buildings at 2.5%;
 - b) Motor Vehicles at 25%;
 - c) Fixtures and Fittings at 50%.
- a. Prepare, taking the above adjustments into account, the revised trial balance and Profit and Loss Account for the year ended 30 June 2007 and the Balance Sheet as at 30 June 2007.
- b. Discuss the purpose of financial statements and their use in decision making.

[TURN OVER]

Question 8

Answer **two** out of the following:

- a. Accounting principles underpin the preparation of accounts. Classify these principles into accounting conventions and accounting concepts and discuss each.
- b. Why is historical cost still so widely used, if it is so heavily flawed?
- c. “Once it is accepted that actual cash flows do not present a true and fair view of the company’s performance, then the door marked creativity is pushed wide open.” (Griffiths, *New Creative Accounting*.) Discuss.
- d. Is auditing enough to stop company directors pursuing their own interests at the expense of the shareholders? Discuss.
- e. What is the relationship between profit and cash flow?

END OF PAPER